

# THE LANCET

## Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Wolter N, Jassat W, Walaza S, et al. Early assessment of the clinical severity of the SARS-CoV-2 omicron variant in South Africa: a data linkage study. *Lancet* 2022; published online Jan 19. [https://doi.org/10.1016/S0140-6736\(22\)00017-4](https://doi.org/10.1016/S0140-6736(22)00017-4).

**Supplement**

**Supplementary Table 1.** Multivariable logistic regression analysis evaluating factors associated with S gene target failure (SGTF) infection compared to non-SGTF infection among hospitalised individuals, 1 October – 30 November 2021<sup>a</sup> (N=302)

	<b>Non-SGTF<sup>b</sup></b>	<b>SGTF<sup>b</sup></b>	<b>Odds ratio</b>	<b>Adjusted odds ratio</b>	<b>P-value</b>
	<b>n (%)</b>	<b>n/N (%)</b>	<b>(95% CI)</b>	<b>(95% CI)</b>	
<b>Age group (years)</b>	<b>N=113</b>	<b>N=204</b>			
<5	7 (6)	20 (10)	3.5 (1.6-9.7)	1.0 (0.3-3.4)	0.962
5-12	2 (2)	6 (3)	3.7 (0.7-20.0)	1.9 (0.3-11.9)	0.498
13-18	2 (2)	6 (3)	3.7 (0.7-20.0)	1.7 (0.3-11.0)	0.559
19-24	3 (3)	20 (10)	8.3 (2.2-31.0)	7.5 (1.5-38.1)	<b>0.016</b>
25-39	35 (31)	101 (50)	3.6 (1.9-6.9)	2.0 (0.9-4.7)	0.096
40-59	33 (29)	26 (13)	1.0 (0.5-2.0)	0.8 (0.3-1.8)	0.535
≥60	31 (27)	25 (13)	Ref	Ref	-
<b>Sex</b>	<b>N=113</b>	<b>N=202</b>			
Male	47 (42)	73 (36)	Ref	Ref	-
Female	66 (58)	129 (64)	1.3 (0.8-2.0)	1.2 (0.7-2.2)	0.466
<b>Province</b>	<b>N=107</b>	<b>N=201</b>			
Eastern Cape	0 (0)	0 (0)	-	-	-
Free State	5 (5)	3 (1)	3.0 (0.4-24.2)	1.4 (0.1-15.8)	0.805
Gauteng	64 (60)	166 (83)	13.0 (2.8-60.8)	4.3 (0.8-22.5)	0.086
KwaZulu-Natal	21 (20)	17 (8)	4.0 (0.8-21.0)	1.2 (0.2-7.5)	0.833
Limpopo	0 (0)	5 (2)	-	-	-
Mpumalanga	1 (1)	3 (1)	15.0 (1.0-228.9)	4.3 (0.2-85.7)	0.342
North West	3 (3)	4 (2)	6.7 (0.8-56.2)	1.6 (0.2-15.8)	0.691
Northern	3 (3)	1 (1)	1.7 (0.1-25.4)	0.9 (0.0-18.3)	0.962
Cape					-
Western Cape	10 (9)	2 (1)	Ref	Ref	
<b>Healthcare sector</b>	<b>N=113</b>	<b>N=204</b>			

	Public	68 (60)	62 (30)	Ref	Ref	-
	Private	45 (40)	142 (70)	3.5 (2.1-5.6)	3.1 (1.6-5.7)	<b>&lt;0.001</b>
<b>Days between diagnosis and admission</b>		N=113	N=204			
	1-7 days before diagnosis	17 (15)	21 (10)	Ref	Ref	-
	0-6 days after diagnosis	93 (82)	182 (89)	1.6 (0.8-3.1)	0.9 (0.4-2.3)	0.906
	7-21 days after diagnosis	3 (3)	1 (0)	0.3 (0.0-2.8)	0.5 (0.0-7.1)	0.593
<b>Reinfection<sup>c</sup></b>		N=113	N=204			
	No	107 (95)	183 (90)	Ref	Ref	-
	Yes	6 (5)	21 (10)	2.0 (0.8-5.2)	2.2 (0.6-7.5)	0.218
<b>Co-morbidity<sup>d</sup></b>		N=113	N=204			
	Absent	77 (68)	178 (87)	Ref	Ref	-
	Present	36 (32)	26 (13)	0.3 (0.2-0.6)	0.6 (0.3-1.3)	0.197
<b>SARS-CoV-2 vaccination<sup>e</sup></b>		N=113	N=204			
	No	18 (16)	24 (12)	Ref	Ref	-
	Yes	5 (4)	4 (2)	0.6 (0.1-2.6)	0.3 (0.1-2.2)	0.254
	Unknown	90 (80)	176 (86)	1.5 (0.8-2.8)	0.9 (0.4-2.3)	0.857
<b>Severe disease<sup>f</sup></b>		N=113	N=204			
	No	68 (60)	162 (79)	Ref	Ref	-
	Yes	45 (40)	42 (21)	0.4 (0.2-0.7)	0.7 (0.3-1.5)	0.353

<sup>a</sup> Cases followed-up for in-hospital outcome until 21 December 2021

<sup>b</sup> S gene target failure (proxy for Omicron variant)

<sup>c</sup> Re-infection was defined as an individual with at least one positive SARS-CoV-2 test >90 days prior to the current episode

<sup>d</sup> Co-morbidity defined as ≥1 of the following conditions: hypertension, diabetes, chronic cardiac disease, chronic kidney disease, asthma, chronic obstructive pulmonary disease (COPD), malignancy, HIV, and active or past tuberculosis

<sup>e</sup> Vaccination defined as ≥1 dose of SARS-CoV-2 vaccine (Johnson & Johnson / Pfizer-BioNTech)

<sup>f</sup> Severe disease defined as a hospitalized patient meeting at least one of the following criteria: admitted to ICU, received oxygen treatment, ventilated, received extracorporeal membrane oxygenation (ECMO), experienced acute respiratory distress syndrome (ARDS) and/or died

**Supplementary Table 2.** Multivariable logistic regression analysis evaluating factors associated with S gene target failure (SGTF) infection during 1 October – 30 November 2021, compared to Delta variant infection during April – November 2021, among hospitalized individuals with known outcome<sup>a</sup>, South Africa (N=989)

	<b>Delta n (%)</b>	<b>SGTF<sup>b</sup> n/N (%)</b>	<b>Odds ratio (95% CI)</b>	<b>Adjusted odds ratio (95% CI)</b>	<b>P-value</b>
<b>Age group (years)</b>	<b>N=793</b>	<b>N=244</b>			
<5	21 (3)	20 (8)	11.4 (5.5-23.6)	7.6 (1.9-30.7)	<b>0.005</b>
5-12	9 (1)	7 (3)	9.3 (3.2-26.9)	13.4 (1.6-111.8)	<b>0.016</b>
13-18	18 (2)	4 (2)	2.7 (0.8-8.4)	5.8 (0.7-49.2)	0.107
19-24	21 (3)	21 (9)	12.0 (5.9-24.6)	15.0 (3.8-58.9)	<b>&lt;0.001</b>
25-39	123 (16)	120 (49)	11.7 (7.4-18.6)	9.7 (4.3-21.7)	<b>&lt;0.001</b>
40-59	265 (33)	44 (18)	2.0 (1.2-3.3)	1.4 (0.6-3.0)	0.404
≥60	336 (42)	28 (11)	Ref	Ref	-
<b>Sex</b>	<b>N=792</b>	<b>N=244</b>			
Male	330 (42)	95 (39)	Ref	Ref	-
Female	462 (58)	149 (61)	1.1 (0.8-1.5)	0.7 (0.4-1.2)	0.240
<b>Province</b>	<b>N=793</b>	<b>N=244</b>			
Eastern Cape	47 (6)	0 (0)	-	-	-
Free State	2 (0)	2 (1)	83.5 (7.5-925.3)	129.2 (4.0-4183.8)	<b>0.006</b>
Gauteng	232 (29)	200 (82)	72.0 (17.6-293.9)	25.3 (5.5-117.0)	<b>&lt;0.001</b>
KwaZulu-Natal	26 (3)	22 (9)	70.6 (15.7-318.3)	34.5 (5.5-216.7)	<b>&lt;0.001</b>
Limpopo	99 (12)	4 (2)	3.4 (0.6-18.8)	1.8 (0.2-14.8)	0.564
Mpumalanga	55 (7)	5 (2)	7.6 (1.4-40.2)	0.7 (0.1-4.9)	0.734

	North West	140 (18)	8 (3)	4.8 (1.0-22.8)	1.5 (0.2-9.0)	0.651
	Northern Cape	25 (3)	1 (0)	3.3 (0.3-38.2)	7.6 (0.5-105.7)	0.131
	Western Cape	167 (21)	2 (1)	Ref	Ref	-
<b>Healthcare sector</b>		<b>N=793</b>	<b>N=244</b>			
	Public	737 (93)	50 (20)	Ref	Ref	-
	Private	56 (7)	194 (80)	51.1 (33.8-77.2)	27.6 (14.6-52.3)	<b>&lt;0.001</b>
<b>Days between diagnosis and admission</b>		<b>N=793</b>	<b>N=244</b>			
	1-7 days before diagnosis	249 (31)	18 (7)	Ref	Ref	-
	0-6 days after diagnosis	487 (61)	199 (82)	5.7 (3.4-9.4)	2.1 (0.9-4.9)	0.084
	7-21 days after diagnosis	57 (7)	27 (11)	6.6 (3.4-12.7)	1.5 (0.5-4.9)	0.479
<b>Reinfection<sup>c</sup></b>		<b>N=793</b>	<b>N=244</b>			
	No	785 (99)	215 (88)	Ref	Ref	-
	Yes	8 (1)	29 (12)	13.2 (6.0-29.4)	22.7 (4.3-120.6)	<b>&lt;0.001</b>
<b>Co-morbidity<sup>d</sup></b>		<b>N=793</b>	<b>N=244</b>			
	Absent	449 (57)	209 (86)	Ref	Ref	-
	Present	344 (43)	35 (14)	0.2 (0.1-0.3)	1.0 (0.5-1.9)	0.956
<b>SARS-CoV-2 vaccination<sup>e</sup></b>		<b>N=793</b>	<b>N=244</b>			
	No	185 (23)	22 (9)	Ref	Ref	-
	Yes	30 (4)	8 (3)	2.2 (0.9-5.5)	2.3 (0.4-12.1)	0.341
	Unknown	578 (73)	214 (88)	3.1 (1.9-5.0)	1.8 (0.8-4.0)	0.150
<b>Severe disease<sup>f</sup></b>		<b>N=793</b>	<b>N=244</b>			
	No	297 (37)	187 (77)	Ref	Ref	-

Yes	496 (63)	57 (23)	0.2 (0.1-0.3)	0.3 (0.1-0.5)	<b>&lt;0.001</b>
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<sup>a</sup> Cases followed-up for in-hospital outcome until 21 December 2021

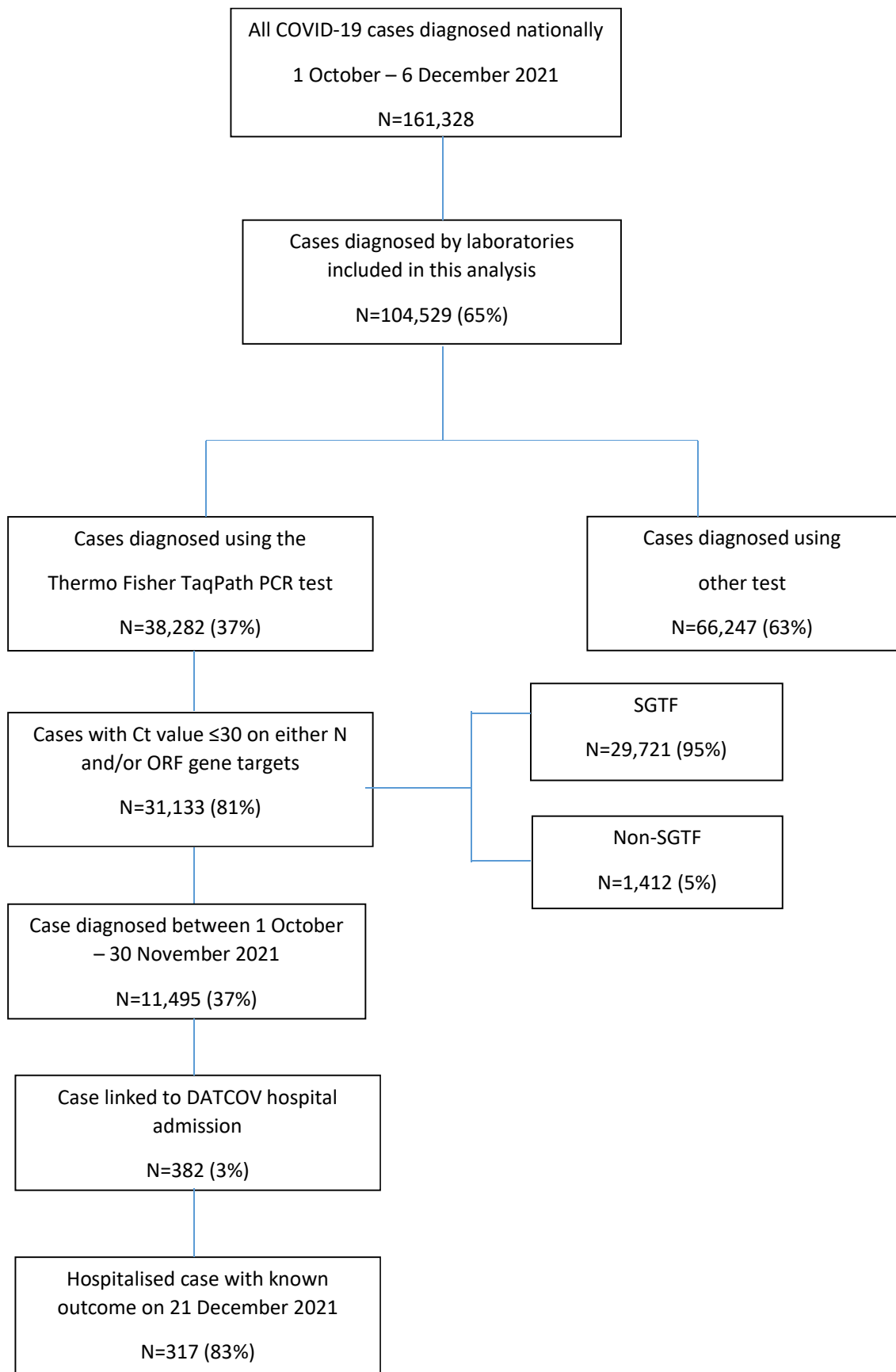
<sup>b</sup> S gene target failure (proxy for Omicron variant)

<sup>c</sup> Re-infection was defined as an individual with at least one positive SARS-CoV-2 test >90 days prior to the current episode

<sup>d</sup> Co-morbidity defined as  $\geq 1$  of the following conditions: hypertension, diabetes, chronic cardiac disease, chronic kidney disease, asthma, chronic obstructive pulmonary disease (COPD), malignancy, HIV, and active or past tuberculosis

<sup>e</sup> Vaccination defined as  $\geq 1$  dose of SARS-CoV-2 vaccine (Johnson & Johnson / Pfizer-BioNTech)

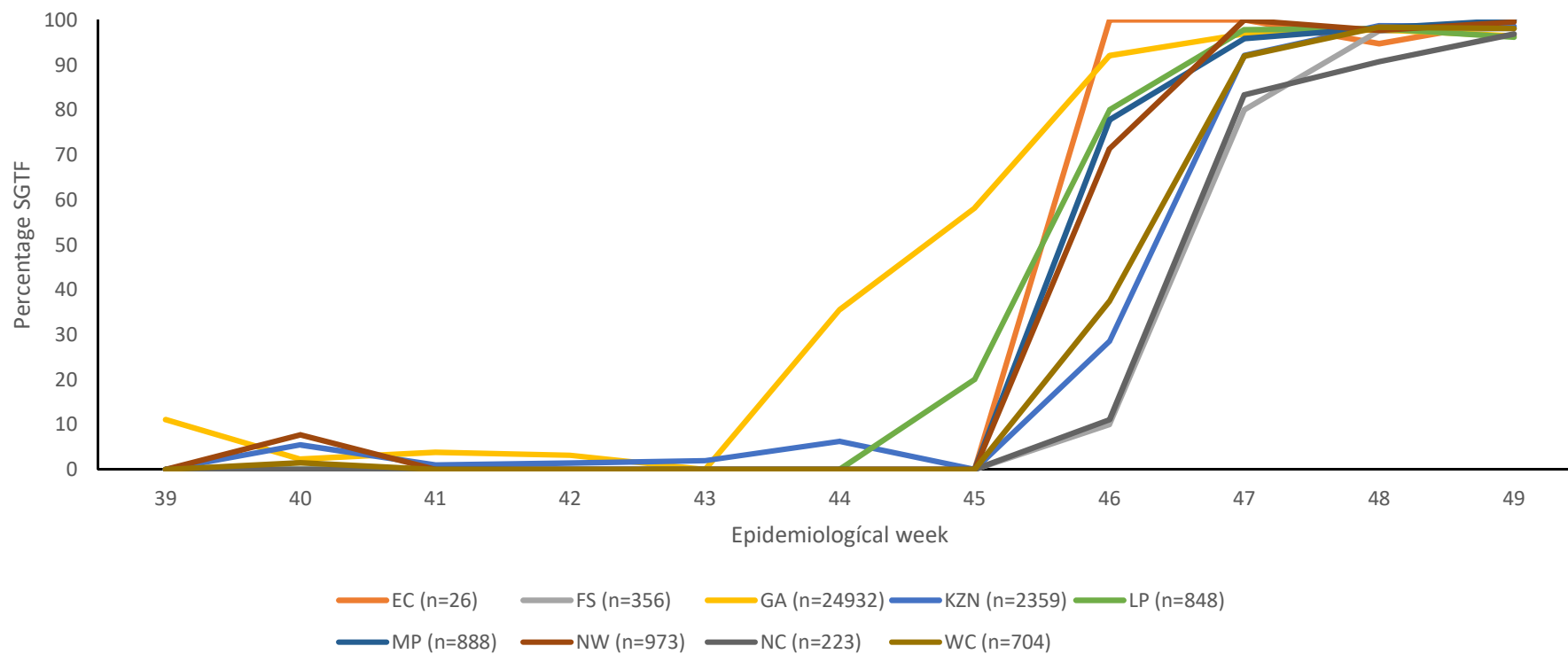
<sup>f</sup> Severe disease defined as a hospitalized patient meeting at least one of the following criteria: admitted to ICU, received oxygen treatment, ventilated, received extracorporeal membrane oxygenation (ECMO), experienced acute respiratory distress syndrome (ARDS) and/or died



**Supplementary Figure 1.** Flowchart of COVID-19 cases diagnosed in South Africa between 1 October – 6 December 2021 and linkage to test and hospitalisation data

PCR – polymerase chain reaction, Ct – cycle threshold, SGTF - S gene target failure





**Supplementary Figure 2.** Percentage of S gene target failure (SGTF) infections among tests performed on the TaqPath assay by epidemiological week and province, DATCOV-Gen, 1 October – 6 December 2021. GA, Gauteng; NW, North West; KZN, KwaZulu-Natal; WC, Western Cape; LP, Limpopo; EC, Eastern Cape; MP, Mpumalanga; NC, Northern Cape; FS, Free State